

ATTACHMENT TLM-4

MURRAY COST OF CAPITAL RECOMMENDATION IN MICHIGAN PSC CASE
NO. U-13531 (Exhibit TLM-2 to Murray Initial Testimony in Michigan)

Exhibit TLM-2
Workpapers of Terry L. Murray for Cost of Capital Analysis

Exhibit TLM-2
Michigan PSC Case No. U-13531
Workpapers of Terry L. Murray for Cost of Capital (9-30-03)
Summary of Recommendations

	A	B	C	D	
1	<i>WACC with Forecasted Target Capital Structure and Best Estimate of Cost of Equity</i>				
2					
3	Component	Cost	% of Total Capitalization	Weighted Cost	
4	Common equity	8.70%	63.71%	5.54%	
5	Long-term debt	4.87%	29.38%	1.43%	
6	Short-term debt	0.95%	6.91%	0.07%	
7	Total		100.00%	7.04%	

	A	B	C	D	E
1	CAPM calculation per Virginia Arbitration Order				
2	Levered beta	1.00	<i>Virginia Arbitration Order, Paragraph 90.</i>		
3	Long-horizon Ibbotson risk premium	7.00%	Sources: E2		
4	Short-horizon Ibbotson risk premium	8.40%	Sources: E3		
5	Long-term (20-year) Treasury bond yield	4.98%	Sources: E12		
6	Short-term (30-day) Treasury bill yield	0.87%	Sources: E8		
7	Long-horizon CAPM cost of equity	11.98%	$B5 + (B2 * B3)$		
8	Short-horizon CAPM cost of equity	9.27%	$B6 + (B2 * B4)$		
9	Average CAPM cost of equity	10.63%			
10					
11					
12					
13	CAPM with beta of 1 and forward-looking market risk premiums				
14		MRP	Risk-Free Rate	Expected Stock Returns (market as a whole, beta = 1)	
15	Fama and French (2002)	4.32%	1.11%	5.43%	$C15 + (1 * B15)$
16	Claus and Thomas	3.40%	4.04%	7.44%	$C16 + (1 * B16)$
17	Gebhardt, Lee and Swaminathan	2.70%	4.04%	6.74%	$C17 + (1 * B17)$
18	<i>Survey of Professional Forecasters</i>			7.46%	Sources: E7
19	Average CAPM cost of equity			6.77%	
20					
21	Note: Sources for market risk premiums and risk-free rates are listed in Sources tab.				
22					
23					
24					
25	Average of CAPMs based on historical and forward-looking market risk premiums				8.70%

	A	B	C	D	E	F	G	
1	Three-Stage DCF Analysis for BLS, SBC, and VZ							
2								
3		BLS	SBC	VZ				
4	Current Price	\$23.62	\$21.98	\$32.68	Sources: Row 15			
5	Current Expected Annual Dividend	\$0.92	\$1.13	\$1.54	Sources: Row 16			
6	Current Dividend Yield	3.90%	5.14%	4.71%	Row 5 / Row 4			
7	Company Growth	3.00%	2.30%	3.00%	Sources: Row 17			
8								
9	Economic Growth Rate (next 10 years)	5.68%	5.68%	5.68%	Row 10 + Row 11			
10	Long-term Inflation Forecast (10 years)	2.47%	2.47%	2.47%	Sources: E18			
11	Real Growth of GDP Forecast (10 years)	3.21%	3.21%	3.21%	Sources: E19			
12								
13								
14								
	Average DCF Return of Comparable Holding Companies							
15	DCF Rate of Return (three-stage DCF model)	8.85%	9.70%	9.55%	Internal rate of return of cash flow	9.37%		
16	Comparison (one-stage DCF return)	6.90%	7.44%	7.71%	Row 6 + Row 7	7.35%		
17								
18								
19								
20	Note: The 300 year IRR closely approximates an infinite stream of cash flows.							
21	<i>Solve for Internal Rate of Return</i>		BLS		SBC		VZ	
22	Year	Cash Flow	Growth	Cash Flow	Growth	Cash Flow	Growth	
23	0	-1.0000		-1.0000		-1.0000		
24	1	0.0390	0.0300	0.0514	0.0230	0.0471	0.0300	
25	2	0.0401	0.0300	0.0526	0.0230	0.0485	0.0300	
26	3	0.0413	0.0300	0.0538	0.0230	0.0500	0.0300	
27	4	0.0426	0.0300	0.0550	0.0230	0.0515	0.0300	
28	5	0.0438	0.0300	0.0563	0.0230	0.0530	0.0300	
29	6	0.0452	0.0327	0.0576	0.0264	0.0546	0.0327	
30	7	0.0466	0.0354	0.0591	0.0298	0.0564	0.0354	
31	8	0.0483	0.0380	0.0609	0.0331	0.0584	0.0380	
32	9	0.0501	0.0407	0.0629	0.0365	0.0606	0.0407	
33	10	0.0522	0.0434	0.0652	0.0399	0.0631	0.0434	
34	11	0.0544	0.0461	0.0678	0.0433	0.0658	0.0461	
35	12	0.0569	0.0488	0.0707	0.0467	0.0689	0.0488	
36	13	0.0597	0.0514	0.0740	0.0500	0.0722	0.0514	
37	14	0.0628	0.0541	0.0777	0.0534	0.0759	0.0541	
38	15	0.0662	0.0568	0.0819	0.0568	0.0801	0.0568	
39	16	0.0699	0.0568	0.0865	0.0568	0.0846	0.0568	
40	17	0.0739	0.0568	0.0915	0.0568	0.0894	0.0568	
41	18	0.0781	0.0568	0.0966	0.0568	0.0945	0.0568	
42	19	0.0825	0.0568	0.1021	0.0568	0.0999	0.0568	
43	20	0.0872	0.0568	0.1079	0.0568	0.1055	0.0568	
44	21	0.0922	0.0568	0.1141	0.0568	0.1115	0.0568	
45	22	0.0974	0.0568	0.1205	0.0568	0.1179	0.0568	
46	23	0.1029	0.0568	0.1274	0.0568	0.1245	0.0568	
47	24	0.1088	0.0568	0.1346	0.0568	0.1316	0.0568	
48	25	0.1150	0.0568	0.1423	0.0568	0.1391	0.0568	
49	26	0.1215	0.0568	0.1504	0.0568	0.1470	0.0568	
50	27	0.1284	0.0568	0.1589	0.0568	0.1553	0.0568	
51	28	0.1357	0.0568	0.1679	0.0568	0.1642	0.0568	
52	29	0.1434	0.0568	0.1775	0.0568	0.1735	0.0568	
53	30	0.1516	0.0568	0.1875	0.0568	0.1834	0.0568	
54	31	0.1602	0.0568	0.1982	0.0568	0.1938	0.0568	
55	32	0.1693	0.0568	0.2095	0.0568	0.2048	0.0568	
56	33	0.1789	0.0568	0.2214	0.0568	0.2164	0.0568	

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	A	B	C	D	E	F	G
57	34	0.1890	0.0568	0.2339	0.0568	0.2287	0.0568
58	35	0.1998	0.0568	0.2472	0.0568	0.2417	0.0568
59	36	0.2111	0.0568	0.2613	0.0568	0.2554	0.0568
60	37	0.2231	0.0568	0.2761	0.0568	0.2699	0.0568
61	38	0.2358	0.0568	0.2918	0.0568	0.2853	0.0568
62	39	0.2492	0.0568	0.3083	0.0568	0.3015	0.0568
63	40	0.2633	0.0568	0.3259	0.0568	0.3186	0.0568
64	41	0.2783	0.0568	0.3444	0.0568	0.3367	0.0568
65	42	0.2941	0.0568	0.3639	0.0568	0.3558	0.0568
66	43	0.3108	0.0568	0.3846	0.0568	0.3760	0.0568
67	44	0.3284	0.0568	0.4064	0.0568	0.3974	0.0568
68	45	0.3471	0.0568	0.4295	0.0568	0.4199	0.0568
69	46	0.3668	0.0568	0.4539	0.0568	0.4438	0.0568
70	47	0.3876	0.0568	0.4797	0.0568	0.4690	0.0568
71	48	0.4097	0.0568	0.5070	0.0568	0.4956	0.0568
72	49	0.4329	0.0568	0.5358	0.0568	0.5238	0.0568
73	50	0.4575	0.0568	0.5662	0.0568	0.5535	0.0568
74	51	0.4835	0.0568	0.5984	0.0568	0.5850	0.0568
75	52	0.5110	0.0568	0.6323	0.0568	0.6182	0.0568
76	53	0.5400	0.0568	0.6683	0.0568	0.6533	0.0568
77	54	0.5707	0.0568	0.7062	0.0568	0.6904	0.0568
78	55	0.6031	0.0568	0.7463	0.0568	0.7296	0.0568
79	56	0.6373	0.0568	0.7887	0.0568	0.7711	0.0568
80	57	0.6735	0.0568	0.8335	0.0568	0.8149	0.0568
81	58	0.7118	0.0568	0.8809	0.0568	0.8612	0.0568
82	59	0.7522	0.0568	0.9309	0.0568	0.9101	0.0568
83	60	0.7950	0.0568	0.9838	0.0568	0.9618	0.0568
84	61	0.8401	0.0568	1.0396	0.0568	1.0164	0.0568
85	62	0.8878	0.0568	1.0987	0.0568	1.0741	0.0568
86	63	0.9383	0.0568	1.1611	0.0568	1.1351	0.0568
87	64	0.9915	0.0568	1.2271	0.0568	1.1996	0.0568
88	65	1.0479	0.0568	1.2967	0.0568	1.2678	0.0568
89	66	1.1074	0.0568	1.3704	0.0568	1.3398	0.0568
90	67	1.1703	0.0568	1.4482	0.0568	1.4159	0.0568
91	68	1.2368	0.0568	1.5305	0.0568	1.4963	0.0568
92	69	1.3070	0.0568	1.6174	0.0568	1.5813	0.0568
93	70	1.3812	0.0568	1.7093	0.0568	1.6711	0.0568
94	71	1.4597	0.0568	1.8064	0.0568	1.7660	0.0568
95	72	1.5426	0.0568	1.9090	0.0568	1.8663	0.0568
96	73	1.6302	0.0568	2.0174	0.0568	1.9723	0.0568
97	74	1.7228	0.0568	2.1320	0.0568	2.0844	0.0568
98	75	1.8207	0.0568	2.2531	0.0568	2.2027	0.0568
99	76	1.9241	0.0568	2.3811	0.0568	2.3279	0.0568
100	77	2.0334	0.0568	2.5163	0.0568	2.4601	0.0568
101	78	2.1489	0.0568	2.6593	0.0568	2.5998	0.0568
102	79	2.2709	0.0568	2.8103	0.0568	2.7475	0.0568
103	80	2.3999	0.0568	2.9699	0.0568	2.9035	0.0568
104	81	2.5362	0.0568	3.1386	0.0568	3.0685	0.0568
105	82	2.6803	0.0568	3.3169	0.0568	3.2428	0.0568
106	83	2.8325	0.0568	3.5053	0.0568	3.4269	0.0568
107	84	2.9934	0.0568	3.7044	0.0568	3.6216	0.0568
108	85	3.1635	0.0568	3.9148	0.0568	3.8273	0.0568
109	86	3.3431	0.0568	4.1372	0.0568	4.0447	0.0568
110	87	3.5330	0.0568	4.3722	0.0568	4.2744	0.0568
111	88	3.7337	0.0568	4.6205	0.0568	4.5172	0.0568
112	89	3.9458	0.0568	4.8830	0.0568	4.7738	0.0568
113	90	4.1699	0.0568	5.1603	0.0568	5.0449	0.0568
114	91	4.4068	0.0568	5.4534	0.0568	5.3315	0.0568
115	92	4.6571	0.0568	5.7632	0.0568	5.6343	0.0568
116	93	4.9216	0.0568	6.0905	0.0568	5.9544	0.0568

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117	94	5.2011	0.0568	6.4365	0.0568	6.2926	0.0568
118	95	5.4965	0.0568	6.8021	0.0568	6.6500	0.0568
119	96	5.8088	0.0568	7.1884	0.0568	7.0277	0.0568
120	97	6.1387	0.0568	7.5967	0.0568	7.4269	0.0568
121	98	6.4874	0.0568	8.0282	0.0568	7.8487	0.0568
122	99	6.8558	0.0568	8.4842	0.0568	8.2945	0.0568
123	100	7.2453	0.0568	8.9661	0.0568	8.7657	0.0568
124	101	7.6568	0.0568	9.4754	0.0568	9.2636	0.0568
125	102	8.0917	0.0568	10.0136	0.0568	9.7897	0.0568
126	103	8.5513	0.0568	10.5824	0.0568	10.3458	0.0568
127	104	9.0370	0.0568	11.1834	0.0568	10.9334	0.0568
128	105	9.5503	0.0568	11.8187	0.0568	11.5544	0.0568
129	106	10.0928	0.0568	12.4899	0.0568	12.2107	0.0568
130	107	10.6660	0.0568	13.1994	0.0568	12.9043	0.0568
131	108	11.2719	0.0568	13.9491	0.0568	13.6373	0.0568
132	109	11.9121	0.0568	14.7414	0.0568	14.4119	0.0568
133	110	12.5887	0.0568	15.5787	0.0568	15.2305	0.0568
134	111	13.3038	0.0568	16.4636	0.0568	16.0955	0.0568
135	112	14.0594	0.0568	17.3987	0.0568	17.0098	0.0568
136	113	14.8580	0.0568	18.3870	0.0568	17.9759	0.0568
137	114	15.7019	0.0568	19.4314	0.0568	18.9970	0.0568
138	115	16.5938	0.0568	20.5351	0.0568	20.0760	0.0568
139	116	17.5363	0.0568	21.7014	0.0568	21.2163	0.0568
140	117	18.5324	0.0568	22.9341	0.0568	22.4214	0.0568
141	118	19.5850	0.0568	24.2367	0.0568	23.6949	0.0568
142	119	20.6975	0.0568	25.6134	0.0568	25.0408	0.0568
143	120	21.8731	0.0568	27.0682	0.0568	26.4631	0.0568
144	121	23.1155	0.0568	28.6057	0.0568	27.9662	0.0568
145	122	24.4284	0.0568	30.2305	0.0568	29.5547	0.0568
146	123	25.8160	0.0568	31.9476	0.0568	31.2334	0.0568
147	124	27.2823	0.0568	33.7622	0.0568	33.0075	0.0568
148	125	28.8320	0.0568	35.6799	0.0568	34.8823	0.0568
149	126	30.4696	0.0568	37.7065	0.0568	36.8636	0.0568
150	127	32.2003	0.0568	39.8483	0.0568	38.9574	0.0568
151	128	34.0293	0.0568	42.1117	0.0568	41.1702	0.0568
152	129	35.9621	0.0568	44.5036	0.0568	43.5087	0.0568
153	130	38.0048	0.0568	47.0314	0.0568	45.9800	0.0568
154	131	40.1634	0.0568	49.7028	0.0568	48.5917	0.0568
155	132	42.4447	0.0568	52.5259	0.0568	51.3517	0.0568
156	133	44.8556	0.0568	55.5094	0.0568	54.2684	0.0568
157	134	47.4034	0.0568	58.6623	0.0568	57.3509	0.0568
158	135	50.0959	0.0568	61.9943	0.0568	60.6084	0.0568
159	136	52.9413	0.0568	65.5156	0.0568	64.0510	0.0568
160	137	55.9484	0.0568	69.2369	0.0568	67.6891	0.0568
161	138	59.1263	0.0568	73.1696	0.0568	71.5338	0.0568
162	139	62.4847	0.0568	77.3256	0.0568	75.5969	0.0568
163	140	66.0338	0.0568	81.7177	0.0568	79.8908	0.0568
164	141	69.7845	0.0568	86.3592	0.0568	84.4286	0.0568
165	142	73.7483	0.0568	91.2645	0.0568	89.2242	0.0568
166	143	77.9372	0.0568	96.4483	0.0568	94.2921	0.0568
167	144	82.3640	0.0568	101.9265	0.0568	99.6479	0.0568
168	145	87.0423	0.0568	107.7160	0.0568	105.3079	0.0568
169	146	91.9863	0.0568	113.8342	0.0568	111.2894	0.0568
170	147	97.2111	0.0568	120.3000	0.0568	117.6106	0.0568
171	148	102.7327	0.0568	127.1331	0.0568	124.2909	0.0568
172	149	108.5679	0.0568	134.3542	0.0568	131.3506	0.0568
173	150	114.7345	0.0568	141.9855	0.0568	138.8113	0.0568
174	151	121.2515	0.0568	150.0503	0.0568	146.6958	0.0568
175	152	128.1386	0.0568	158.5732	0.0568	155.0281	0.0568
176	153	135.4168	0.0568	167.5801	0.0568	163.8337	0.0568

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177	154	143.1085	0.0568	177.0987	0.0568	173.1395	0.0568
178	155	151.2371	0.0568	187.1579	0.0568	182.9738	0.0568
179	156	159.8273	0.0568	197.7884	0.0568	193.3667	0.0568
180	157	168.9055	0.0568	209.0228	0.0568	204.3500	0.0568
181	158	178.4994	0.0568	220.8953	0.0568	215.9571	0.0568
182	159	188.6381	0.0568	233.4422	0.0568	228.2234	0.0568
183	160	199.3528	0.0568	246.7017	0.0568	241.1865	0.0568
184	161	210.6760	0.0568	260.7144	0.0568	254.8859	0.0568
185	162	222.6424	0.0568	275.5229	0.0568	269.3634	0.0568
186	163	235.2885	0.0568	291.1726	0.0568	284.6633	0.0568
187	164	248.6529	0.0568	307.7112	0.0568	300.8321	0.0568
188	165	262.7764	0.0568	325.1892	0.0568	317.9194	0.0568
189	166	277.7021	0.0568	343.6600	0.0568	335.9772	0.0568
190	167	293.4755	0.0568	363.1799	0.0568	355.0607	0.0568
191	168	310.1449	0.0568	383.8085	0.0568	375.2282	0.0568
192	169	327.7612	0.0568	405.6088	0.0568	396.5411	0.0568
193	170	346.3780	0.0568	428.6474	0.0568	419.0647	0.0568
194	171	366.0523	0.0568	452.9946	0.0568	442.8675	0.0568
195	172	386.8440	0.0568	478.7247	0.0568	468.0224	0.0568
196	173	408.8168	0.0568	505.9162	0.0568	494.6061	0.0568
197	174	432.0376	0.0568	534.6523	0.0568	522.6997	0.0568
198	175	456.5773	0.0568	565.0205	0.0568	552.3891	0.0568
199	176	482.5109	0.0568	597.1137	0.0568	583.7648	0.0568
200	177	509.9175	0.0568	631.0297	0.0568	616.9226	0.0568
201	178	538.8808	0.0568	666.8722	0.0568	651.9638	0.0568
202	179	569.4893	0.0568	704.7506	0.0568	688.9953	0.0568
203	180	601.8363	0.0568	744.7804	0.0568	728.1303	0.0568
204	181	636.0206	0.0568	787.0839	0.0568	769.4881	0.0568
205	182	672.1465	0.0568	831.7903	0.0568	813.1950	0.0568
206	183	710.3245	0.0568	879.0360	0.0568	859.3845	0.0568
207	184	750.6709	0.0568	928.9652	0.0568	908.1975	0.0568
208	185	793.3090	0.0568	981.7304	0.0568	959.7831	0.0568
209	186	838.3689	0.0568	1037.4927	0.0568	1014.2988	0.0568
210	187	885.9883	0.0568	1096.4223	0.0568	1071.9110	0.0568
211	188	936.3124	0.0568	1158.6991	0.0568	1132.7955	0.0568
212	189	989.4950	0.0568	1224.5132	0.0568	1197.1383	0.0568
213	190	1045.6983	0.0568	1294.0656	0.0568	1265.1358	0.0568
214	191	1105.0939	0.0568	1367.5685	0.0568	1336.9955	0.0568
215	192	1167.8633	0.0568	1445.2464	0.0568	1412.9368	0.0568
216	193	1234.1979	0.0568	1527.3364	0.0568	1493.1916	0.0568
217	194	1304.3004	0.0568	1614.0891	0.0568	1578.0049	0.0568
218	195	1378.3846	0.0568	1705.7693	0.0568	1667.6356	0.0568
219	196	1456.6769	0.0568	1802.6570	0.0568	1762.3573	0.0568
220	197	1539.4161	0.0568	1905.0480	0.0568	1862.4592	0.0568
221	198	1626.8550	0.0568	2013.2547	0.0568	1968.2469	0.0568
222	199	1719.2603	0.0568	2127.6076	0.0568	2080.0433	0.0568
223	200	1816.9143	0.0568	2248.4557	0.0568	2198.1898	0.0568
224	201	1920.1150	0.0568	2376.1679	0.0568	2323.0469	0.0568
225	202	2029.1776	0.0568	2511.1343	0.0568	2454.9960	0.0568
226	203	2144.4348	0.0568	2653.7667	0.0568	2594.4398	0.0568
227	204	2266.2387	0.0568	2804.5007	0.0568	2741.8040	0.0568
228	205	2394.9611	0.0568	2963.7963	0.0568	2897.5384	0.0568
229	206	2530.9949	0.0568	3132.1399	0.0568	3062.1186	0.0568
230	207	2674.7554	0.0568	3310.0455	0.0568	3236.0469	0.0568
231	208	2826.6815	0.0568	3498.0561	0.0568	3419.8544	0.0568
232	209	2987.2370	0.0568	3696.7456	0.0568	3614.1021	0.0568
233	210	3156.9121	0.0568	3906.7208	0.0568	3819.3831	0.0568
234	211	3336.2247	0.0568	4128.6225	0.0568	4036.3241	0.0568
235	212	3525.7223	0.0568	4363.1283	0.0568	4265.5873	0.0568
236	213	3725.9833	0.0568	4610.9540	0.0568	4507.8727	0.0568

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	A	B	C	D	E	F	G
237	214	3937.6191	0.0568	4872.8562	0.0568	4763.9198	0.0568
238	215	4161.2759	0.0568	5149.6344	0.0568	5034.5105	0.0568
239	216	4397.6364	0.0568	5442.1336	0.0568	5320.4707	0.0568
240	217	4647.4221	0.0568	5751.2468	0.0568	5622.6734	0.0568
241	218	4911.3957	0.0568	6077.9176	0.0568	5942.0413	0.0568
242	219	5190.3630	0.0568	6423.1434	0.0568	6279.5492	0.0568
243	220	5485.1756	0.0568	6787.9779	0.0568	6636.2276	0.0568
244	221	5796.7336	0.0568	7173.5351	0.0568	7013.1653	0.0568
245	222	6125.9880	0.0568	7580.9918	0.0568	7411.5131	0.0568
246	223	6473.9441	0.0568	8011.5922	0.0568	7832.4871	0.0568
247	224	6841.6642	0.0568	8466.6506	0.0568	8277.3723	0.0568
248	225	7230.2707	0.0568	8947.5564	0.0568	8747.5271	0.0568
249	226	7640.9501	0.0568	9455.7776	0.0568	9244.3866	0.0568
250	227	8074.9560	0.0568	9992.8657	0.0568	9769.4678	0.0568
251	228	8533.6135	0.0568	10560.4605	0.0568	10324.3736	0.0568
252	229	9018.3228	0.0568	11160.2947	0.0568	10910.7980	0.0568
253	230	9530.5635	0.0568	11794.1994	0.0568	11530.5313	0.0568
254	231	10071.8995	0.0568	12464.1099	0.0568	12185.4655	0.0568
255	232	10643.9834	0.0568	13172.0714	0.0568	12877.5999	0.0568
256	233	11248.5617	0.0568	13920.2450	0.0568	13609.0476	0.0568
257	234	11887.4800	0.0568	14710.9149	0.0568	14382.0415	0.0568
258	235	12562.6889	0.0568	15546.4949	0.0568	15198.9415	0.0568
259	236	13276.2496	0.0568	16429.5358	0.0568	16062.2413	0.0568
260	237	14030.3406	0.0568	17362.7335	0.0568	16974.5767	0.0568
261	238	14827.2639	0.0568	18348.9367	0.0568	17938.7326	0.0568
262	239	15669.4525	0.0568	19391.1563	0.0568	18957.6526	0.0568
263	240	16559.4774	0.0568	20492.5740	0.0568	20034.4473	0.0568
264	241	17500.0557	0.0568	21656.5522	0.0568	21172.4039	0.0568
265	242	18494.0589	0.0568	22886.6444	0.0568	22374.9964	0.0568
266	243	19544.5214	0.0568	24186.6058	0.0568	23645.8962	0.0568
267	244	20654.6502	0.0568	25560.4050	0.0568	24988.9831	0.0568
268	245	21827.8344	0.0568	27012.2360	0.0568	26408.3574	0.0568
269	246	23067.6554	0.0568	28546.5310	0.0568	27908.3521	0.0568
270	247	24377.8982	0.0568	30167.9740	0.0568	29493.5465	0.0568
271	248	25762.5628	0.0568	31881.5149	0.0568	31168.7799	0.0568
272	249	27225.8764	0.0568	33692.3849	0.0568	32939.1666	0.0568
273	250	28772.3062	0.0568	35606.1124	0.0568	34810.1113	0.0568
274	251	30406.5731	0.0568	37628.5396	0.0568	36787.3256	0.0568
275	252	32133.6665	0.0568	39765.8406	0.0568	38876.8457	0.0568
276	253	33958.8588	0.0568	42024.5404	0.0568	41085.0505	0.0568
277	254	35887.7219	0.0568	44411.5342	0.0568	43418.6814	0.0568
278	255	37926.1445	0.0568	46934.1094	0.0568	45884.8625	0.0568
279	256	40080.3495	0.0568	49599.9668	0.0568	48491.1227	0.0568
280	257	42356.9134	0.0568	52417.2449	0.0568	51245.4185	0.0568
281	258	44762.7861	0.0568	55394.5444	0.0568	54156.1582	0.0568
282	259	47305.3123	0.0568	58540.9546	0.0568	57232.2280	0.0568
283	260	49992.2541	0.0568	61866.0808	0.0568	60483.0186	0.0568
284	261	52831.8141	0.0568	65380.0742	0.0568	63918.4540	0.0568
285	262	55832.6611	0.0568	69093.6624	0.0568	67549.0222	0.0568
286	263	59003.9563	0.0568	73018.1824	0.0568	71385.8067	0.0568
287	264	62355.3810	0.0568	77165.6152	0.0568	75440.5205	0.0568
288	265	65897.1667	0.0568	81548.6221	0.0568	79725.5421	0.0568
289	266	69640.1257	0.0568	86180.5838	0.0568	84253.9529	0.0568
290	267	73595.6849	0.0568	91075.6410	0.0568	89039.5774	0.0568
291	268	77775.9198	0.0568	96248.7374	0.0568	94097.0254	0.0568
292	269	82193.5920	0.0568	101715.6657	0.0568	99441.7364	0.0568
293	270	86862.1880	0.0568	107493.1155	0.0568	105090.0270	0.0568
294	271	91795.9603	0.0568	113598.7245	0.0568	111059.1406	0.0568
295	272	97009.9709	0.0568	120051.1320	0.0568	117367.2998	0.0568
296	273	102520.1372	0.0568	126870.0363	0.0568	124033.7624	0.0568

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	A	B	C	D	E	F	G
297	274	108343.2810	0.0568	134076.2544	0.0568	131078.8801	0.0568
298	275	114497.1794	0.0568	141691.7856	0.0568	138524.1605	0.0568
299	276	121000.6191	0.0568	149739.8790	0.0568	146392.3328	0.0568
300	277	127873.4543	0.0568	158245.1042	0.0568	154707.4173	0.0568
301	278	135136.6665	0.0568	167233.4261	0.0568	163494.7986	0.0568
302	279	142812.4292	0.0568	176732.2847	0.0568	172781.3032	0.0568
303	280	150924.1752	0.0568	186770.6785	0.0568	182595.2812	0.0568
304	281	159496.6683	0.0568	197379.2530	0.0568	192966.6932	0.0568
305	282	168556.0791	0.0568	208590.3946	0.0568	203927.2013	0.0568
306	283	178130.0644	0.0568	220438.3290	0.0568	215510.2664	0.0568
307	284	188247.8520	0.0568	232959.2261	0.0568	227751.2495	0.0568
308	285	198940.3300	0.0568	246191.3101	0.0568	240687.5205	0.0568
309	286	210240.1407	0.0568	260174.9765	0.0568	254358.5716	0.0568
310	287	222181.7807	0.0568	274952.9152	0.0568	268806.1385	0.0568
311	288	234801.7059	0.0568	290570.2408	0.0568	284074.3272	0.0568
312	289	248138.4428	0.0568	307074.6305	0.0568	300209.7490	0.0568
313	290	262232.7063	0.0568	324516.4695	0.0568	317261.6627	0.0568
314	291	277127.5240	0.0568	342949.0049	0.0568	335282.1251	0.0568
315	292	292868.3674	0.0568	362428.5084	0.0568	354326.1499	0.0568
316	293	309503.2907	0.0568	383014.4477	0.0568	374451.8752	0.0568
317	294	327083.0776	0.0568	404769.6683	0.0568	395720.7417	0.0568
318	295	345661.3964	0.0568	427760.5855	0.0568	418197.6798	0.0568
319	296	365294.9637	0.0568	452057.3867	0.0568	441951.3080	0.0568
320	297	386043.7177	0.0568	477734.2463	0.0568	467054.1423	0.0568
321	298	407971.0008	0.0568	504869.5515	0.0568	493582.8176	0.0568
322	299	431143.7537	0.0568	533546.1420	0.0568	521618.3216	0.0568
323	300	455632.7189	0.0568	563851.5629	0.0568	551246.2423	0.0568

	A	B	C	D	E	F	G
1	Weighted Average Yield to Maturity of SBC's Publicly Traded Bonds						
2	9/29/2003						
3							
4	Long-Term Bonds						
5							
6	Qty	Price	MktValue	YTM	Product	Wtd Avg	
7							
8	56	\$105.14	\$5,887.95	1.275	7,507.14		Ameritech Cap Fdg Corp
9	200	\$108.80	\$21,759.00	1.525	33,182.48		Ameritech Cap Fdg Corp
10	6	\$110.56	\$663.34	3.474	2,304.45		Ameritech Cap Fdg Corp
11	225	\$114.07	\$25,664.85	5.054	129,710.15		Ameritech Cap Fdg Corp
12	24	\$110.40	\$2,649.60	6.048	16,024.78		Ameritech Cap Fdg Corp
13	100	\$108.34	\$10,834.00	5.899	63,909.77		Ameritech Cap Fdg Corp
14	65	\$116.74	\$7,588.36	5.95	45,150.74		Indiana Bell
15	198	\$120.99	\$23,955.43	5.653	135,420.02		Indiana Bell
16	50	\$106.58	\$5,328.75	1.521	8,105.03		Pacific Bell
17	16	\$106.72	\$1,707.52	1.421	2,426.39		Pacific Bell
18	222	\$108.55	\$24,097.21	2.15	51,809.01		Pacific Bell
19	25	\$108.22	\$2,705.38	2.288	6,189.90		Pacific Bell
20	15	\$111.97	\$1,679.52	2.52	4,232.39		Pacific Bell
21	80	\$111.50	\$8,919.60	3.277	29,229.53		Pacific Bell
22	4	\$111.72	\$446.86	3.226	1,441.57		Pacific Bell
23	5	\$113.82	\$569.09	4.038	2,297.97		Pacific Bell
24	31	\$115.27	\$3,573.28	3.788	13,535.57		Pacific Bell
25	100	\$115.10	\$11,510.20	3.817	43,934.43		Pacific Bell
26	35	\$108.97	\$3,813.78	2.159	8,233.94		SBC Communications
27	150	\$112.05	\$16,806.75	4.34	72,941.30		SBC Communications
28	92	\$113.11	\$10,406.49	4.183	43,530.34		SBC Communications
29	240	\$109.25	\$26,220.48	4.528	118,726.33		SBC Communications
30	207	\$109.11	\$22,585.15	4.611	104,140.12		SBC Communications
31	5	\$109.51	\$547.55	1.795	982.85		Southern New England Tel
32	250	\$114.25	\$28,562.50	3.143	89,771.94		Southern New England Tel
33	25	\$114.18	\$2,854.43	3.162	9,025.69		Southern New England Tel
34	95	\$107.32	\$10,195.69	1.644	16,761.71		Southwestern Bell
35	8	\$107.32	\$858.58	1.644	1,411.51		Southwestern Bell
36	5	\$108.93	\$544.66	1.601	871.99		Southwestern Bell
37	150	\$108.87	\$16,330.20	1.727	28,202.26		Southwestern Bell
38	25	\$111.13	\$2,778.35	2.618	7,273.72		Southwestern Bell
39	140	\$112.24	\$15,713.88	2.523	39,646.12		Southwestern Bell
40	20	\$112.52	\$2,250.32	3.092	6,957.99		Southwestern Bell
41	1	\$112.62	\$112.62	3.066	345.28		Southwestern Bell
42	90	\$112.64	\$10,137.24	3.061	31,030.09		Southwestern Bell
43	9	\$111.99	\$1,007.87	3.232	3,257.42		Southwestern Bell
44	90	\$112.46	\$10,121.67	3.292	33,320.54		Southwestern Bell
45	10	\$110.08	\$1,100.80	3.262	3,590.81		Southwestern Bell
46	60	\$112.71	\$6,762.48	3.064	20,720.24		Southwestern Bell
47	2	\$111.08	\$222.15	3.463	769.32		Southwestern Bell
48	185	\$113.91	\$21,074.09	3.524	74,265.09		Southwestern Bell
49	5	\$113.84	\$569.18	3.514	2,000.10		Southwestern Bell
50	185	\$118.46	\$21,914.92	4.179	91,582.43		Southwestern Bell
51	11	\$118.44	\$1,302.79	4.914	6,401.89		Southwestern Bell
52	38	\$103.75	\$3,942.50	6.299	24,833.81		Southwestern Bell
53	10	\$102.50	\$1,025.00	6.406	6,566.15		Southwestern Bell
54	5	\$106.75	\$533.77	6.624	3,535.66		Southwestern Bell
55	50	\$112.75	\$5,637.50	5.38	30,329.75		Wisconsin Bell
56			\$405,473.28		1,477,437.68	3.64%	Weighted Average
57						3.52%	Unweighted Average
58							
59	Source: BondsOnline; copies are included in Exhibit TLM-3, Tab 7.						
60	Note: This figure is not used in final recommendation; Used instead a 9/30/03 Verizon bond issue --						
61	see Sources: D23.						
62							
63	Short-Term Bonds						
64							
65	Qty	Price	MktValue	YTM	Product	Wtd Avg	
66							
67	65	\$104.628	\$6,800.82	1.048	7,127.26		Pacific Bell
68	172	\$104.738	\$18,014.94	0.914	16,465.65		Pacific Bell
69			\$24,815.76		\$23,592.91	0.95%	Weighted Average
70						0.98%	Unweighted Average
71							
72	Source: BondsOnline; copies are included in Exhibit TLM-3, Tab 7.						

Exhibit TLM-2

Michigan PSC Case No. U-13531
 Workpapers of Terry L. Murray for Cost of Capital (9-30-03)
 Capital Structure

	A	B	C	D	E
1	Holding Company Books				
2	Claim (in millions)	BLS	SBC	VZ	Average
3	Common Equity	\$19,057	\$38,183	\$34,225	
4	Total Debt	\$15,412	\$18,528	\$48,929	
5	Short-term	\$3,694	\$1,790	\$10,083	
6	Long-term	\$11,718	\$16,738	\$38,846	
7	% Common Equity	55.29%	67.33%	41.16%	
8	% Debt	44.71%	32.67%	58.84%	
9	% of debt that is short-term	23.97%	9.66%	20.61%	18.08%
10					
11	Holding Company Market				
12	Claim (in millions)	BLS	SBC	VZ	Average
13	Market Capitalization	\$43,630	\$73,050	\$90,080	
14	Total Debt Amount	\$15,412	\$18,528	\$48,929	
15	% Common Equity	73.90%	79.77%	64.80%	72.82%
16	% Debt	26.10%	20.23%	35.20%	27.18%
17	Short-term as % of total cap	6.26%	1.95%	7.25%	5.15%
18	Long-term as % of total cap	19.85%	18.28%	27.94%	22.02%
19					
20	Holding Company 50:50 Market/Book				
21		BLS	SBC	VZ	Average
22	% Equity	64.59%	73.55%	52.98%	63.71%
23	% Debt	35.41%	26.45%	47.02%	36.29%
24	Short-term as % of total cap	8.49%	2.56%	9.69%	6.91%
25	Long-term as % of total cap	26.92%	23.90%	37.33%	29.38%
26					
27					
28	Note: Sources for each assumption are listed in Sources tab.				

Exhibit TLM-2
 Michigan PSC Case No. U-13531
 Workpapers of Terry L. Murray for Cost of Capital (9-30-03)
 Sources

	A	B	C	D	E	F	G
1	CAPM Source	BLS	SBC	VZ	Applies to All	Info Date	Source Info
2	Historical Average Long-Horizon Equity Premium				7.00%	1/1/2003	Ibbotson Associates, "Valuation Edition: 2003 Yearbook" (Exhibit TLM-3, Tab 1)
3	Historical Average Short-Horizon Equity Premium				8.40%	1/1/2003	Ibbotson Associates, "Valuation Edition: 2003 Yearbook" (Exhibit TLM-3, Tab 1)
4	Equity Premium1				3.40%	10/1/2001	James Claus and Jacob Thomas, "Equity Premia as Low as 3%: Evidence from Analysts' Earnings Forecasts for Domestic and International Markets", Journal of Finance, Vol. 56, no. 5. (Exhibit TLM-3, Tab 2)
5	Equity Premium2				4.32%	4/1/2002	Eugene Fama and Kenneth French, "The Equity Premium," Journal of Finance, Vol. 57, no. 2. (Exhibit TLM-3, Tab 3)
6	Equity Premium3				2.70%	6/1/2001	William Gebhardt, Charles Lee and Bhaskaram Swaminathan, "Toward an Implied Cost of Capital," Journal of Accounting Research, Vol. 39. (Exhibit TLM-3, Tab 4)
7	10-yr S&P 500 Expected Returns				7.46%	2/24/2003	Federal Reserve Bank of Philadelphia, Survey of Professional Forecasters (Exhibit TLM-3, Tab 5)
8	Current 1-month Treasury rate				0.87%	9/26/2003	Federal Reserve Statistical Release H.15 (Exhibit TLM-3, Tab 6)
9	Current 3-month Treasury rate				0.94%	9/26/2003	Federal Reserve Statistical Release H.15 (Exhibit TLM-3, Tab 6)
10	Current 6-month LIBOR rate				1.11%	9/26/2003	Federal Reserve Statistical Release H.15 (Exhibit TLM-3, Tab 6)
11	Current 10-year Treasury rate				4.04%	9/26/2003	Federal Reserve Statistical Release H.15 (Exhibit TLM-3, Tab 6)
12	Current 20-year Treasury rate				4.98%	9/26/2003	Federal Reserve Statistical Release H.15 (Exhibit TLM-3, Tab 6)
13							
14	DCF Source	BLS	SBC	VZ	Applies to All	Info Date	Source Info
15	Current Price	\$23.62	\$21.98	\$32.68		9/29/2003	Yahoo! Finance Quotes (web) (Exhibit TLM-3, Tab 7)
16	Current Expected Annual Dividend	0.92	1.13	1.54		9/29/2003	Yahoo! Finance Quotes (web) (Exhibit TLM-3, Tab 7)
17	Analysts' 5-Year Growth Forecast	3.00%	2.30%	3.00%		9/29/2003	Yahoo! Finance Quotes (web) (Exhibit TLM-3, Tab 7)
18	Long-term Inflation Forecast (10 years)				2.47%	2/24/2003	Federal Reserve Bank of Philadelphia, Survey of Professional Forecasters (Exhibit TLM-3, Tab 5)
19	Real Growth of GDP Forecast (10 years)				3.21%	2/24/2003	Federal Reserve Bank of Philadelphia, Survey of Professional Forecasters (Exhibit TLM-3, Tab 5)
20							
21	Debt Cost Source	BLS	SBC	VZ	Applies to All	Info Date	Source Info
22	Yield-to-maturity for publicly traded SBC bonds		various			9/29/2003	BondsOnline, Inc. (web) (Exhibit TLM-3, Tab 8)
23	Yield-to-maturity for newly issued ILEC (VZ New England) 10-year bonds			4.87%		9/30/2003	CBS MarketWatch (web) (Exhibit TLM-3, Tab 9)
24							
25	Capital Structure Source	BLS	SBC	VZ	Applies to All	Info Date	Source Info
26	Holding Company Common Equity (in millions)	\$19,057	\$38,183	\$34,225		6/30/2003	Securities and Exchange Commission, 10Q (Exhibit TLM-3, Tab 10)
27	Holding Company Short-term Debt (in millions)	\$3,694	\$1,790	\$10,083		6/30/2003	Securities and Exchange Commission, 10Q (Exhibit TLM-3, Tab 10)
28	Holding Company Long-term Debt (in millions)	\$11,718	\$16,738	\$38,846		6/30/2003	Securities and Exchange Commission, 10Q (Exhibit TLM-3, Tab 10)
29	Holding Company Market Equity (in millions)	\$43,630	\$73,050	\$90,080		9/29/2003	Yahoo! Finance Quotes (web) (Exhibit TLM-3, Tab 7)